



CASE STUDY

Ghallis Landfill, Malta

THE PROJECT

An existing landfill facility needed developing to incorporate a novel liner system in a new 36m deep pit.

THE PROBLEM

The novel 'rock step' composite liner barrier solution required advanced numerical analysis to assess the effectiveness of the proposal and ensure strain in the geomembrane liner was adequately controlled.

REMEDY'S SOLUTION

Remedy were able to show, through a series of numerical simulations, the potential suitability of the proposed barrier configuration.

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Landfill Liner Feasibility Advanced Analysis

As part of the development of a new 36m deep landfill cell adjacent to an existing facility in Malta, a proposal was made by Leap Environmental to incorporate a novel 'rock step' liner system. The method was seen as a cost effective solution and minimised environmental impact by utilising local materials, plant and expertise. Remedy Geotechnics were asked to undertake an advanced numerical assessment of the novel system to confirm its ability to limit strain in the geomembrane and hence damage to the liner system.

The liner system concept comprised a series of 3m steps cut into the underlying limestone bedrock. The liner was then to be installed against the rock, incorporating the clay geological barrier, impermeable geo-membrane and geotextile. Construction was to be carried out one step at a time as the cell was filled. The vertical elements were to be

restrained by 1m square limestone blocks already available on site. A crushed rock strain buffer zone could then to be placed over the entire liner system.

Remedy undertook a series of finite element simulations which showed that the strain developed within the landfill waste could be dissipated through the crushed rock buffer zone and therefore the mobilised strain within the geomembrane would be limited to acceptable values. By undertaking a parametric study with differing thicknesses of buffer zone, the optimum thickness could be determined. This minimised the volume of high quality graded material required and maximised the void space available for the landfill. A win-win situation!

Contact Remedy Geotechnics - we'll give you an answer every time.

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